



FOREST MANAGEMENT UPDATE

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There is Life After Gypsy Moth

by

Ray R. Hicks, Jr.
Division of Forestry
West Virginia University



West Virginia, Virginia, and parts of Maryland, New York, and Pennsylvania lie along the so-called "leading edge" of the gypsy moth infestation; therefore, it is easy to understand the apprehension expressed by those facing the inevitable. As the leading edge advanced rapidly across Pennsylvania's ridges, much forest devastation was left in its wake, so naturally people to the south and west are braced for the same scenario.

Indeed, losses can be staggering when taken as a whole. But losses to individual landowners will vary widely; and even though some losses can be expected, it should not be cause for panic.

The first question for most forestland managers is: **when will gypsy moth defoliate my forest?** Although an exact answer is probably not possible, a pretty close approximation can be gotten by consulting the proper sources. Most state forestry or pest control divisions keep accurate records on the outbreak status of pests like gypsy moth in their state, and the USDA Forest Service publishes an annual update of the status of gypsy moth in the northeast.

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The closer you are to the leading edge, the better a prediction will be of when the insect will begin doing serious damage. Low to moderate level populations of gypsy moth can go essentially undetected in a forest, but once the insect becomes established in an area the population can literally explode. To avoid being caught by surprise, a landowner might follow these simple steps: when the leading edge gets within 25-50 miles of your forest, place burlap bands around a few selected large white or chestnut oaks. These bands should be checked weekly from mid-May to late June. If several gypsy moth caterpillars are found during a given year, the next step, egg mass counting, would be advisable for the coming fall. The USDA Forest Service, Forest Insect and Disease Leaflet 162, contains information on recognizing different life stages of gypsy moth, but Cooperative Extension personnel and state forestry or pest control specialists can also assist in planning and conducting gypsy moth egg mass surveys.

Many state organizations set arbitrary thresholds on the number of egg masses that represents a hazardous population of insects. For example, several states use 250 egg masses per acre as a level below which no suppression is called for.

The regional outlook for gypsy moth spread cannot be predicted by anyone, but I suspect that westward spread into the Appalachian Plateau will be slower than the southward spread along the parallel ridges. This is due to differences in forest types, topography, land use patterns, and prevailing winds.

The second question most landowners ask is: **what kind of damage can I expect, given defoliation?** The answer to this question depends on a number of factors including the level of defoliation. But, assuming moderate to heavy defoliation, several methods are available to predict the amount of loss. Generally, forests that have a high proportion of trees in the white oak group (white oak and chestnut oak) and trees with poor crowns are most vulnerable. But sometimes pockets of dead trees seem associated with conditions that favor tree growth (high site index).

In our study areas in eastern West Virginia, overall mortality following heavy insect defoliation was between 25 and 30 percent of the total basal area, and these figures are fairly comparable with other studies elsewhere.

Options for controlling gypsy moth range from no action to spraying with chemical insecticides and liquidation of forests. Choice of a control option will depend on the landowner objectives and the cost/benefit ratio. Here again, federal and state agency personnel discussed earlier can be of help.

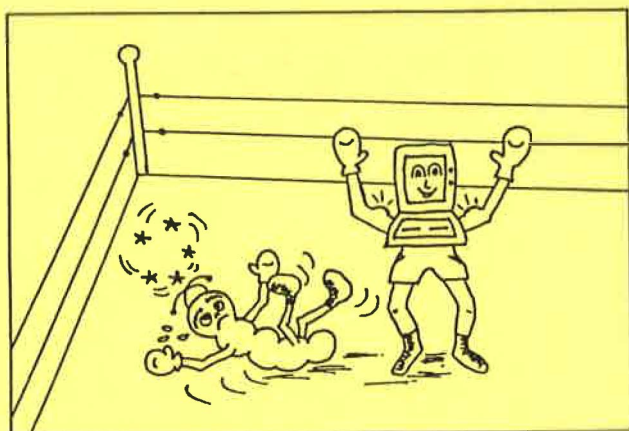
In conclusion, if your forests are near the leading edge of the gypsy moth population, and if you have a high proportion of white oak species, you can expect to lose upwards of one-third of your trees, more if drought or other stresses occur simultaneously with defoliation. In other forest conditions, and if defoliation is less severe, somewhat less damage will be felt. Generally, a gypsy moth outbreak cycle lasts about three years, and residual mortality is over in two to three years after the last defoliation. So for those of us facing gypsy moth for the first time, we will have some difficult decisions to make, but even in areas where gypsy moth has been around for many years, forests still thrive and life goes on.

DEVELOPING SILVICULTURAL OPTIONS TO MITIGATE THE MOTH

by

Arlyn W. Perkey, Northeastern Area State & Private Forestry
and
Kurt W. Gottschalk, Northeastern Forest Experiment Station

FIGHTING BACK!



SILVAH III
VS
MOTH'AMMAD GYP-SEE'

It has become apparent that repeated defoliations by gypsy moth in many stands in the northeast will force land managers to re-evaluate silvicultural techniques applied in susceptible areas. Following are brief examples of changes that may be needed to reduce future susceptibility to defoliation and vulnerability to mortality:

1. Partial cuts may need to be re-scheduled to avoid additional stress on residual trees shortly before and during periods of defoliation.
2. The intensity of cutting and the species composition of residual stands may need to be adjusted.
3. Marking guides may be changed to increase the emphasis on crown condition as a crop tree selection criterion.

In 1983, the USDA-Forest Service, Northeastern Forest Experiment Station, formed Research Work Unit 4507 to identify silvicultural options for coping with the gypsy moth. In 1986, this unit developed preliminary guidelines for making silvicultural prescriptions that consider the impact gypsy moth may have on individual stands.

In 1986, the West Virginia Division of Forestry, as a special project, began establishment of demonstration areas to display the application of silvicultural techniques for coping with gypsy moth. This effort has been implemented with cooperation and technical assistance from the USDA-Forest Service (Northeastern Area State & Private Forestry, and Northeastern Forest Experiment Station) in Morgantown, West Virginia. Funding for the project was obtained through the Northeastern Area's Focusing Federal Assistance program, a recent initiative that provides funds for new innovative projects. The first demonstration area has already been visited by foresters from the State of Maryland. When additional sites are completed, they will exhibit various prescriptions from the guidelines developed by Kurt Gottschalk.

Application of the gypsy moth guidelines is being facilitated by SILVAH, a computer program developed by the Northeastern Forest Experiment Station in Warren, Pennsylvania. SILVAH (SILViculture of Allegheny Hardwoods) provides a stand prescription based on data collected from an inventory of the overstory, combined with a regeneration and stand condition survey. The current microcomputer version, 2.3, was utilized for the first time in West Virginia in 1986. The opportunity to transfer this technology, SILVAH, to a new area was an unexpected benefit of the silvicultural options for the gypsy moth focus funding project. Although SILVAH V2.3 has been useful, its utility in areas impacted by gypsy moth could be improved with a program option incorporating the gypsy moth guidelines in the stand prescriptions it produces.

A new version of SILVAH, 3.01, is currently being developed that will include several enhancements. Among them will be an option which incorporates the gypsy moth guidelines in stand prescriptions. When version 3.01 is completed, it will be promoted as a tool to facilitate adoption of the gypsy moth guidelines in states that are, or will be, impacted by the insect. Continuation of this cooperative effort is expected to result in products that will be useful to many practicing foresters.

ATTENTION IBM PC USERS

There are two new additions to the "GRO" series of growth and yield programs. GROWPINE is for unthinned white pine plantations (stand ages ranging from 15 to 60) similar to those found in southeastern Ohio. Primary inputs are plantation age, initial planted spacing, position on the slope, and the average length of 5-year growth intercept for site index trees. The outputs are predicted basal area and volume in tons and board feet.

GROLOB is a series of loblolly pine growth and yield programs that have been linked together in one package to facilitate their use by foresters on the eastern shore of Maryland. The GROLOB program is designed to accomodate the following stand conditions in that area: 1) planted cutover land, 2) previously thinned old-field plantations, 3) unthinned old-field plantations, and 4) natural loblolly pine stands.

To obtain a copy of these programs or additional information, contact Arlyn Perkey at the address printed on the last page of the Update.



DEER DAMAGE TO HARDWOODS
by
Rodney Jacobs
Northeastern Area, State & Private Forestry
St. Paul, MN



The following report is based on conditions observed in the farm-forest landscapes of the midwest, but it may have application in many areas in the east which have low to moderate deer populations. It is intended to guide your observations and provide a generalized account of browsing effects on hardwood regeneration. Evaluate the material presented here in light of your own experiences; if you have questions, contact Rod Jacobs.

Dormant Season Browsing of Natural Regeneration

Although deer browsing can be an adverse factor in the regeneration of hardwoods, even relatively severe dormant season browsing is not necessarily damaging. During this season, deer normally feed on less than 25 percent of the current year's shoot growth. New shoots develop from lower buds on browsed leaders, and the growth potential of these buds is usually as great as, or greater than, that of the terminal buds.

With dormant season browsing, leader growth and net height changes of browsed seedlings are often comparable to that of unbrowsed seedlings; survival is not affected, and form usually corrects as the trees mature. We should evaluate growth and survival in relation to competing vegetation. If net height growth is positive, browsing damage is probably minor. Furthermore, adverse dormant season browsing effects can usually be corrected by minimal silvicultural modifications.

Growing Season Browsing of Hardwood Plantations

"Real" deer damage is usually associated with browsing during the growing season, especially in plantations. At this time of year, the deer eat a much greater portion of the current leader, which is all palatable. In addition, the buds below the growing tip are not physiologically mature, and immediate shoot growth is poor. If all or most of the leader is browsed, new growth must come from dormant buds formed in previous years. Growth from these buds is initially very slow. Often, the end result of repeated browsing during the growing season is very long establishment periods. Direct mortality from browsing is rare; in most cases, competing unpalatable vegetation outgrows and suppresses the palatable seedlings, causing the young trees to die.

Plantations are more susceptible to browsing damage than natural stands because the browse is more accessible, and in the open environment, more palatable. Also, there is less variety of browse available, so the deer concentrate on the planted seedlings.

Silvicultural Browsing Control Techniques

Besides reducing the deer population, what can we do to discourage intensive browsing pressure on hardwood seedlings?

A silvicultural technique suggested by Iowa foresters for walnut plantations is interplanting autumn olive closely enough so that the walnut are forced to grow through the outer edges of the olive crowns. Observations in severely browsed walnut-olive plantations in Iowa support the validity of this practice as a means of providing protection for the seedlings. Another technique that may yield a similar effect is to pile brush around the desirable species. Seedlings in a walnut plantation in western Iowa benefited from brush that accumulated naturally.

Remember to consider the differences between species palatability when applying silvicultural techniques. Although damage to natural regeneration by browsing is uncommon, it can occur in areas where selective feeding by a large deer population discriminates against palatable species. An important mitigating technique is to reduce the quantity of unpalatable vegetation such as ironwood, beech, and striped maple, and increase the amount of desirable, palatable vegetation such as sugar maple, basswood, and oak. This technique is especially critical when applying the shelterwood method of cutting to regenerate oaks.

The silvicultural techniques of providing profuse browse around winter deer yards in the north have been effective. These are: (1) establishing dense vegetation; (2) making regeneration areas large, and (3) scheduling cuttings during the winter to provide tops which supply more and better quality browse than the regenerating stand. Scheduling logging for the winter and locating the cut areas one-fourth to one-half mile away from regenerating stands is also an effective method of relieving deer pressure on these areas.

Other Browsing Control Techniques

In addition to the silvicultural techniques already described, foresters have used repellents, fencing, and fertilization for controlling deer browsing. A report prepared by Marquis and Brenneman entitled The Impact of Deer on Forest Vegetation in Pennsylvania, General Technical Report NE-65, describes these methods. Remember, the report relates to Pennsylvania conditions -- very high deer populations, landscape almost exclusively forest, and forests predominantly mid-age. The fertilization applications were in natural stands with tens of thousands of seedlings or thousands of saplings (abundant feed), and with black cherry which responds well to fertilization. It's doubtful that fertilization would be effective in plantations with only 200-500 seedlings. Fencing may be the only effective technique in these plantations, but it's expensive. Another option which may be applied on a small scale is using cages for individual seedlings (wire or plastic tubes). However, it is extremely important to use stakes to provide adequate support for the cages (Marquis, Devices to Protect Seedlings from Deer Browsing, Research Note NE-243).

Summary

All browsing is not damaging. Dormant season browsing and browsing of natural reproduction in areas with low to moderate deer populations should not cause serious problems. Don't be fooled by the appearance of the browsed seedlings in such situations; leader loss does not necessarily mean poor growth, and certainly not mortality. To evaluate the impact of browsing, compare the height development of the desirable vegetation with that of the undesirable. Reduced browsing pressure can usually be obtained by applying silvicultural techniques. Probably the only effective technique for discouraging growing season browsing in plantations is protection.

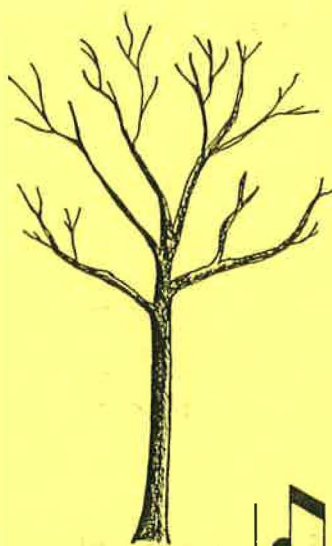
Walnuts and White Pine Can be Grown Together Successfully
by

Richard F. Camp

Manager, Wisconsin State Department of Natural Resources
Wilson State Nursery, Boscobel

The following article appeared in Tree Planter's
Notes 37(2):29-31; 1986

BLACK WALNUT



WHITE PINE



TOGETHER IN PERFECT HARMONY

Many cultural problems await the novice landowner during the early years of walnut plantation establishment. Insect damage to leaders, epicormic sprouting, and girdling by meadow mice are a few examples. These problems may require annual corrective pruning or other cultural practices. Many landowners do not have the time, money, or patience for all this management.

The challenge presented to the forester is formidable. How do you establish a walnut plantation that will virtually take care of itself for 10 to 15 years? Usually, by then stem crowding is so apparent that even the most reluctant landowner will concede that an improvement cutting is in order.

One answer to this challenge in southwest Wisconsin is the interplanting of white pine and walnut. Several plantations of this mixture were established 15 to 20 years ago, and the effectiveness of the combination is encouraging.

There has been concern about the dangers of growing white pine and walnut together in plantations. Walnut trees produce the chemical, juglone, which inhibits the growth of white pine. This growth inhibition seems to occur where white pine is planted beneath an established walnut overstory with the objective of bringing the white pine through to rotation age. But, evidence from even-aged (15 to 20 years) plantations of mixed white pine and walnut appears to remove this concern.

The planting design starts with the first row being planted to pure 3-0 white pine on a 6-foot spacing. The second row is planted to white pine alternated with 1-0 walnut on the same spacing. Rows are spaced 6 feet apart. These two basic rows are replicated over and over. When a plantation is completed, each walnut is surrounded by white pine. Approximately 300 walnut and 900 white pine are needed to cover an acre.

It is very important that the plantation be kept from grass competition during the first 2 years. This is best accomplished by applying a band of simazine to each row of the planting. Consult your local forester for the amount of chemical to apply. The rate of application will depend on the soil type and amount of grass competition or weeds present.

This white pine-walnut plantation prescription can be planted in many areas of southern Wisconsin, and on a wide range of sites. However, it works best on a well-drained, silt loam with a soil acidity between 6.0 and 7.0. Areas to avoid are river bottoms and valley floors where prolonged periods of high humidity in midsummer are common. These conditions may produce blister rust infection in the white pine as well as bacterial and fungal infections in the walnut. In the early years of this prescription (ages 7 to 9) a modest thinning of white pine Christmas trees can be anticipated to help defray the cost of stand establishment. From ages 10 to 15, a genetic thinning is necessary. At this time, trees with better genetic traits will express their dominance; and additional growing space will favor future development of these trees.

By age 15, the stocking of the stand should be reduced from 1,200 per acre to 700. Pruning should be done to half the height of the tree, whether walnut or white pine.

The unusual aspect of mixing a conifer and a fine hardwood is that it gives landowners options that are not possible with pure plantings. Landowners may want to favor a walnut by cutting adjacent white pine. They can favor a fast-growing white pine by cutting deformed or poor-growing walnuts. It is entirely possible to bring white pine and walnut growing on the same site to final sawlog rotation.

A 60-year-old white pine plantation in Wyalusing State Park is living testimony to just how well walnut and white pine can grow together. This 1923 planting of white pine now has dominants over 115 feet in height and a basal area of 220 square feet. As this planting developed, many walnut volunteers began to appear throughout the plantation. Today these walnut trees are sawtimber size, with 30 to 40 feet of clear trunk. There is no apparent adverse effect from the walnut trees growing in close proximity to the white pine for 60 years.

The adaptations are limitless on the species mix of this prescription. For instance, for landowners who want to grow a desirable fuelwood species along with their walnut and white pine, it is possible to add green ash to the design. In this case, the design can be altered by substituting a green ash for every other walnut.

With high land prices and property taxes, foresters must be imaginative and innovative in their planting prescriptions. Every effort must be made to maximize returns for the landowner if we are to keep interest alive in forest management. Mixing of conifers and hardwoods is another option that foresters now have in assisting landowners to get the maximum return from a forestry investment.

NOTE: The black walnut-white pine mixture has also been used in Iowa and northern Indiana with positive results. The plantings there are not as dense.

WHAT DO YOU THINK?

Woodlot Volunteers Available

A York and Cumberland County jointly-sponsored Extension woodlot management project is in the process of being launched in Maine.

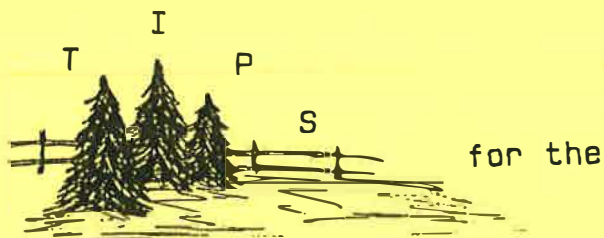
Twelve volunteers (five from York County and seven from Cumberland County) have been trained to expand the educational services in basic forestry offered by the University of Maine Cooperative Extension Service. Guided by the woodlot owner's needs, the volunteers will provide a link between the woodlot owner and the professional forester.

The volunteers will help the woodlot owner identify problems, concerns and options, distribute printed information including boundary lines, brush laws, local ordinances, etc., encourage landowners to attend tours and clinics, and refer them to consulting foresters, agencies and organizations.

The volunteer cannot write prescriptions, management plans, or inventories and cannot give legal advice, evaluate, or cruise timber, or run boundary lines.

For more information on this unique program (only other similar program is in Oregon) contact Betty Syvinski at the York County Extension Office, Court House Annex, Alfred, Maine 04002 (phone 207-324-2814), or Jack Donovan in Cumberland County (phone 207-780-4205).

Have you considered using an approach like the above, which is being tried in Maine? A recent study, THE COMMUNICATION AND DIFFUSION OF WOODLOT MANAGEMENT STRATEGIES TO SMALL FOREST PROPERTY OWNERS IN NORTHERN LOWER MICHIGAN, lends credibility to the technique as a means of personal contact with landowners who have not routinely used the services of professional foresters. The study recognizes the role of foresters in contacting landowners, but it also indicates that influence by lay peers (friends, neighbors, relatives, etc.) is equally important as a source of landowner advice. If this personal contact technique is tried, it is critical that you have the right volunteers to get the informal communications process "off on the right foot." Obviously, there is risk involved, but the potential benefits for forest management in your area may be worth the investment of your time in training volunteer advocates for forest management.



BACKYARD SILVICULTURIST. . .

Before foresters can effectively work with new landowners, there must be a degree of trust and mutual respect established. Landowners who are meeting a forester for the first time often wonder if this person really has any advice to offer that is worth taking. The "environmentally conscious" clients may be wondering if they can trust this timber beast in their woods. Frequently, those acres closest to the landowner's house are the most precious to him. This is where he watches the squirrels play and the leaves turn color. The forester who can give sound multi-resource advice in this small, but vital area will often win the confidence of the client and increase the probability that his advice for the remainder of the ownership will be accepted. If you can demonstrate in someone's backyard that you know how to use silviculture to accomplish non-timber as well as timber objectives, you are likely to obtain the opportunity to practice forestry on their woodlot, and often on property owned by friends, relatives, and neighbors. With this in mind, I propose dedicating this new section of the Update, entitled "TIPS FOR THE BACKYARD SILVICULTURIST", to those of you who are interested in increasing your skills in applying "backyard silviculture".

TIP #1:

FACILITATING THE ESTABLISHMENT OF DEN TREES



Though den trees take a long time to develop, the process can be started by cutting off a four- to six-inch limb, on a tree at least 20 inches in diameter, leaving a stub projecting about six inches from the trunk. This open wound allows fungal diseases to enter the tree and begin the decay process. After several years, a natural cavity may form, surrounded by sound wood. Ash, beech, and basswood are especially good species to select for future den trees because they readily form natural cavities.

from-- Managing New England Woodlands For Wildlife That Uses Tree Cavities by Richard M. DeGraaf

You may find it difficult to recommend the preceding treatment for any tree, but if providing wildlife habitat is a high priority for a landowner, there is nothing wrong with dedicating a portion of the growing stock to meeting that objective.

Where timber harvesting occurs, leaving damaged bumper trees along skid trails can also serve as a source for potential cavity trees. These trees may not require treatment to develop into den trees, and they can again be utilized as bumper trees in future harvesting operations.

Before installing this practice in anyone's backyard, evaluate its compatibility with the landowner's aesthetic objectives. Will your client view these standing, wounded trees as potential future homes for wildlife, or as blemishes on the landscape? This is a case of beauty being in the eye of the beholder. If a compromise is appropriate, consider leaving only the trees with wounds that are most likely to develop into cavities.



TIP #2:

A NEW DEER REPELLENT

Highly perfumed soap may be the hottest new way to repel deer from fruit or shade trees. The following is taken from an article in the American Agriculturist:

Use highly perfumed small bars of soap that are used in hotels. The cost ranges from two to five cents per bar. Leave the wrapper on the soap, drill a hole through the soap and wrapper, and hang it on the tree at browsing height. Use cheap, insulated copper electric wire to fashion a hook. For best results, hang the bar of soap on each young tree in the block. Soap has been found to be effective for four to six months or longer, depending on the weathering factors and size of the soap. The wrapper helps retain the odor and keeps it from weathering too fast.



SHARING INFORMATION



We invite participation in the development of future issues of FOREST MANAGEMENT UPDATE. The intent of this periodical is to provide a means of technical communication for professional foresters managing the private non-industrial forests in the Northeastern Area. The majority of articles printed in the Update address technical forestry subjects of interest to readers in a reasonably broad geographic area. If any of our subscribers would like to submit articles for publication, please feel free to contact me at the address and phone number listed below.

FOREST MANAGEMENT UPDATE

<< A TECHNOLOGY TRANSFER PERIODICAL >>

BY

ARLYN W. PERKEY

FIELD REPRESENTATIVE, FOREST MANAGEMENT
U. S. FOREST SERVICE, NA-S&PF



P. O. BOX 4360
MORGANTOWN, WV 26505



(304) 291-4484
FTS: 923-4484

ILLUSTRATIONS
AND
EDITORIAL ASSISTANCE
BY
BRENDA L. WILKINS